



South African equine clinic enhanced with thermal imaging camera

Horse owners have used their hands to identify temperature differences in their horses as an indication for health issues for centuries. Human touch cannot identify changes in temperature of less than two degrees Celcius, however. Modern thermal imaging cameras can detect temperature changes of less than 0.03 degrees Celcius, making the identification of temperature related health problems more accurate.

Equine thermography consultant Lynne Boyes soon realized this technology's potential and has started to offer her services with her company ThermoZone in the Kwa-Zulu Natal Midlands, which is a major equine hub in South Africa. "Thermal imaging is the perfect tool to highlight problem areas, and can be seen as an early warning system to identify any trouble as it starts to appear allowing for early treatment and the prevention of further serious injury."

According to Boyes the key to equine thermography is to look for asymmetry in the thermal patterns. "The body is designed to be in balance and both sides of the horse should show symmetrical thermal patterns. Abnormalities are shown as hot or cold areas, indicating inflammation or neurological injuries. In some instances injury sites can be detected up to two weeks before the horse shows signs of distress."

For her equine thermography inspections Boyes uses the FLIR E60bx thermal imaging camera. "When I researched the available thermal imaging cameras I realized I

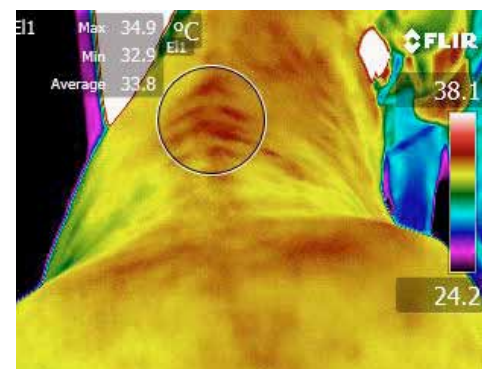
needed an adequate image quality and thermal sensitivity. With a resolution of 320x240 pixels and a thermal sensitivity of below 50mK the FLIR E60bx thermal imaging camera delivers exactly the imaging performance I need and at a very competitive price. An added advantage is that I can operate it one handedly. This means that I can keep one hand free to handle the horse."

Useful features

"Another useful feature is the voice recording", continues Boyes. "This feature allows me to record voice comments, so I do not need to hold pen and paper. The



Thermal imaging cameras can be used to spot infections, damage in soft tissues, such as muscles and tendons and other health issues.



This thermal image shows a thermal pattern typical for the condition known as kissing spine. This diagnosis was confirmed by X-ray examination.

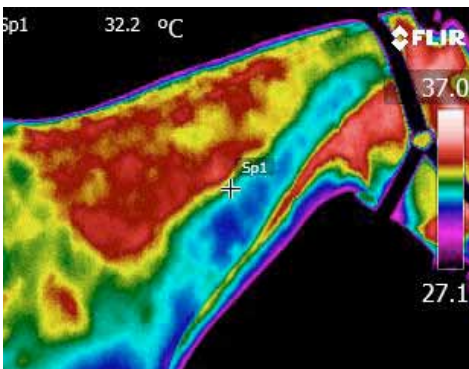


FLIR E60bx thermal imaging camera's WiFi connectivity with tablet computers has also proved to be a great help. Using my tablet I can make reports on location, almost in real time, so I can spend more time doing what I love, working in the field inspecting horses."

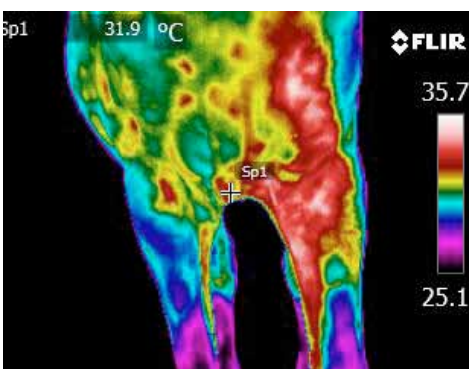
Boyes started to investigate equine thermography several decades ago. "I read an article about thermal imaging and its use in finding problems in horses. What I read made absolute sense to me. This was before the rise of the internet and information on equine thermography was very limited, but I did manage to find out what the price tag was of a thermal imaging camera and it was far above my budget. So this idea was put on a shelf, but not quite forgotten."

Affordable thermal imaging cameras

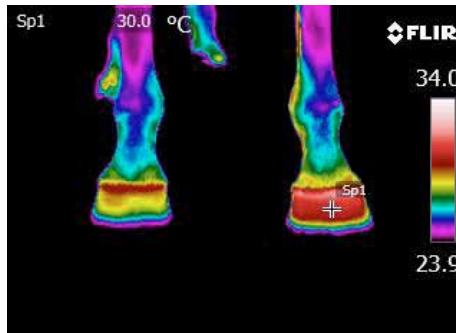
"In recent years I encountered several cases where the actual injury was not in the area the owner said the horse was showing signs of pain", continues Boyes. "Due to pain caused by the injury the horse will compensate its stance to relieve the pain of the injury. This change in stance often causes pain in other parts of the animal's body. This is called 'referred pain' by veterinarians. Referred pain, left untreated, can become



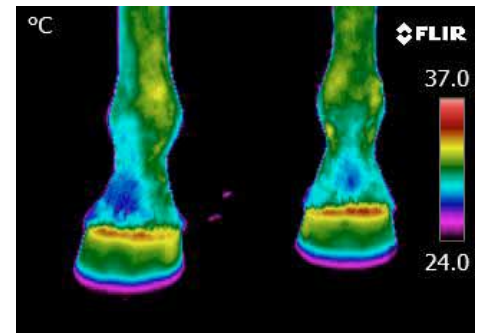
This thermal image shows referred pain in the neck area as a result of an abscess in the front hoof.



A thermal scan of a haematoma as a result of sliding into a jump during a competition.



In this thermal image the front left hoof shows heat rise which turned out to be caused by an abscess. The thermal image on the right are the hooves of the same horse after treatment.



a serious problem for the horse. These areas cannot be seen but are associated with increased heat in the affected areas. I wanted to have an additional tool to help me evaluate this type of injury, so my idea of using thermography resurfaced."

With internet making information readily available, Boyes was able to perform some very thorough research on equine thermography and on the available equipment. "I was amazed at how affordable this technology had become in recent years. My research also indicated that many of the professional and credible thermographers currently working in the equine industry use FLIR thermal imaging cameras. I ordered the FLIR E60bx thermal imaging camera because it was the best quality camera I could afford with my budget and I'm still very happy with my choice. It provides me with crisp, well focused images and shows me the smallest of temperature changes on the horses I scan. It is a camera that I have come to trust to give me accurate thermal readings every time."

Local support

For Boyes the local support from FLIR products distributor H Rohloff (Pty) Ltd, based in Johannesburg, was very important. "I am based at the very tip of South Africa, so we are a long way from FLIR's European and North American facilities. In the unlikely event that I would have a technical problem with my equipment it would be a financial set-back for me if the problem cannot be speedily resolved. Having a local agent, I am confident that the team at FLIR will come up with a plan to quickly get my equipment up and running again."

For equine thermography you need more than a just a very good camera, according to Boyes. "Knowledge of the horses' physiology is very important to be

able to accurately interpret the thermal images. I have been working with horses in one way or another for over 40 years. In this time I have learned the ins and outs of horse anatomy and physiology and gained a lot of hands-on experience with treating a wide variety of injuries. This gives me an excellent understanding of what to look for when interpreting radiometric images of horses. There are also factors that can create false readings or 'artifacts', such as human hands touching the animal's skin, to name an example. You need to make sure that the possibility of artifacts influencing your judgment is avoided."

Local interest in equine thermal imaging is growing rapidly, according to Boyes. "ThermoZone has provided thermal imaging services to breeding, racing and horse trails industries as well as to the many polo players, show jumpers, carriage drivers and endurance riders in this area. Some of our local farriers, equine physiotherapists and stud cattle breeders are also benefiting from ThermoZone's thermographic services. So although equine thermal imaging is relatively new to the South African equestrian industry, the substantial financial investment that I have made in equipment and thermography training is already bearing fruit."

For more information about thermal imaging cameras or about this application, please contact:

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